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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,958	02/11/2002	MacGregor Belniak	005378.P001	6988

7590

10/02/2006

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EXAMINER

HIRL, JOSEPH P

ART UNIT

PAPER NUMBER

2129

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,958	BELNIAK ET AL.	
	Examiner	Art Unit	
	Joseph P. Hirl	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/28/06</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered July 28, 2006 for the patent application 10/074,958 filed on February 11, 2002.
2. The First Office Action of April 26, 2006 is fully incorporated into this Final Office Action by reference.
3. Please correct the spelling of the Examiner's name.

Status of Claims

4. Claims 11-23 are pending in this application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Heckerman (Microsoft Research Technical Report, MSR-TR-95-06, referred to as **Heckerman**).

Claim 11

Heckerman anticipates dynamically processing a database to eliminate missing values in records, each record to contain a plurality of values (**Heckerman**, abstract; p19-23, Section 6; Examiner's Note (EN): ¶ 11. applies; processing of data is dynamic); preparing a statistical summary of processed data in the database (**Heckerman**, abstract; EN: ¶ 11. applies; probabilistic semantics is synonymous with statistical summary); constructing a database structure to hold the statistical summary (**Heckerman**; p 35-37, Section 12; EN: Table 1 is a database); searching through possible relationship models to find a high-scoring network (**Heckerman**; p 35-37, Section 12); and using the high-scoring network to compute a decision for a new case (**Heckerman**; p 35-37, Section 12; EN: such would be the next case).

Claim 12

Heckerman anticipates discretizing continuous variables in the database before preparing the plurality of statistical summaries (**Heckerman**; p 9:11).

Claim 13

Heckerman anticipates modifying a relationship of the high-scoring network (**Heckerman**; p 35-37, Section 12).

Claim 14

Heckerman anticipates the new case consists of values of a subset of fields of a record (**Heckerman**; p 12:16-23).

Claim 15

Heckerman anticipates records in the database represent bank customer transaction records, and the decision is to identify an at-risk customer of the bank (Heckerman; p 12:8-15).

Claim 16

Heckerman anticipates the statistical summary is a Bayesian model of correlations between data in records (Heckerman, abstract).

Claim 17

Heckerman anticipates the decision is one of a detection of an illegal financial transaction, a network fault diagnosis, or a prediction of a result-of a pharmaceutical compound in an organism (Heckerman, p 12:8-15).

Claim 18

Heckerman anticipates aggregating similar database records together; and computing a frequency of occurrence (Heckerman, p 5:8-21).

Claim 19

Heckerman anticipates preparing a plurality of hashes to cluster the database records (Heckerman, p 5:33; p 6:1; EN: the value of hashes are θ).

Claim 20

Heckerman anticipates the database structure is an alternating decision tree ("ADTree") (Heckerman, p 18:1-3; EN: an ADTree is a binary tree and Heckerman's binary variables achieve the same result).

Claim 21

Heckerman anticipates correlation statistics between nodes (**Heckerman**, Fig. 4).

Claim 22

Heckerman anticipates inferring a value of a non-observed variable based on a previous observation and the high-scoring network (**Heckerman**, p 35-37, Section 12).

Claim 23

Heckerman anticipates storing the high-scoring network in an eXtensible Markup Language ("XML") format (**Heckerman**, p 46:11; EN: BUGS is available in hypertext markup language which for the purpose intended is not functionally distinct from extensible markup language).

Response to Arguments

7. Applicant's arguments filed on July 28, 2006 related to Claims 11-23 have been fully considered but are not persuasive.

In reference to Applicant's argument:

The independent claim recites a method comprising several operations, including preparing a statistical summary of processed data in a database, and constructing a database structure to hold the statistical summary. The Examiner asserts that the first of these operations is anticipated by Heckerman's Abstract. However, there is no mention of statistical methods in that section (or in the reference more generally, as far as Applicants can determine) that anticipate this claim element. The phrase "... summarize Bayesian statistical methods ..." (Heckerman Abstract, 1. 12) describes how the author plans to discuss the subject in the paper, not any specific operation undertaken on processed data.

Examiner's response:

¶ 11. applies. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Prior Office Action applies. Bayesian processes are axiomatic with statistics. Applicant's limitation of claim 11 relates to "statistical summary."

In reference to Applicant's argument:

Similarly, Heckerman's Table 1, identified by the Examiner as the claimed database structure, shows raw data records on which the example fraud detection model is to operate, not a statistical summary prepared from processed data in the database.

Examiner's response:

¶ 11. applies. The data of Table 1 is processed data ... it has been assembled and arranged for the fraud problem ... processed data. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Applicant has not limited "process data" in claim 1 to exclude such interpretation. Table 1 is a statistical summary. Hence, Heckerman anticipates the statistical and database limits of claim 1. Applicant is reminded again that the Examiner has the obligation to interpret the claims in the broadest reasonable manner.

In reference to Applicant's argument:

These two points provide perhaps the clearest examples of reasons why Heckerman fails to anticipate the claimed invention. More generally, Heckerman may be likened to a catalog of techniques for using Bayesian Networks. However, the Examiner has not identified, nor have Applicants located, any teaching or suggestion to combine the techniques in the specific way envisioned by Applicants in their invention.

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Examiner's response:

¶ 11. applies. Heckerman's art anticipates applicants "two" points as noted above. The examples of Heckerman manifest the structure one of ordinary skill in the art would follow in the decision process ... applicant's claims.

In reference to Applicant's argument:

For example, claim 12 refines the method of claim 11 by requiring that continuous variables in the database be discretized before preparing the plurality of statistical summaries. The portion of Heckerman the Examiner identifies as allegedly anticipating this operation actually explains that "[i]n multinomial sampling, the observed variable X is discrete..." Consequently, the observed variable is not continuous, and there is no point in "discretizing it" (since it is already discrete).

Examiner's response:

Simply, in multinomial sampling, one is observing one sample at a time of some variable X. This sampling process is discrete over the variable X which is continuous. However, the observed variable X ... sampled is discrete. Hence Heckerman would correctly state "the observed variable X is discrete" since the sample is observed ... but X is continuous. Note that Heckerman carefully stated "observed" variable X. Note equations (11) and (12) on page 9 of Heckerman ... One cannot perform equation (12) unless X is continuous in its domain.

In reference to Applicant's argument:

Claim 19 requires the preparation of a plurality of hashes to cluster the database records. The Examiner rejects this claim with the assertion that "the value of hashes are 8," but Heckerman explains in the cited material that 9 (plural) are values of the variable O that correspond to the possible true values of the physical probability - quantities that are completely different from the hashes used for clustering.

Examiner's response:

¶ 11. applies. Applicant in the specification has not defined the term "hashes." From the Authoritative Dictionary of IEEE Standards terms, Seventh Edition, hashes or hashing is defined as a technique for arranging a set of items, in which a hash function is applied to the key of each item to determine its hash value. Hence, Θ is the variable or hash function from which values θ correspond to the possible true values of the physical probability. Clustering can be performed around values of physical probability or ...whatever.

In reference to Applicant's argument:

Similarly, claim 20 restricts its base claim 11, requiring the database to be structured as an alternating decision tree ("ADTree"). The Examiner asserts that an ADTree is a binary tree, and then rejects the claim over Heckerman because the reference uses binary variables. There are two difficulties with this analysis: first, the portion of Heckerman cited (p. 18, ll. 1-3, Figure 4) shows a Bayesian network structure with two binary variables, X and Y, but the structure is not a binary tree. Second, although ADTrees may be binary trees, not all binary trees are ADTrees. Thus, even assuming that binary variables imply binary trees, and that Heckerman teaches or suggests both, the reference still fails to anticipate claim 20 because it requires a specific type of (possibly) binary tree, with properties and semantics not shared by binary trees in general. (An introductory paper by Freund and Mason describing ADTrees is attached for the Examiner's convenience.) For at least these reasons, Applicants respectfully request that the rejection of claim 20 be withdrawn as well.

Examiner's response:

¶ 11. applies. The claims and only the claims form the metes and bounds of the invention. Limitations appearing in the specification but not recited in the claim are not read into the claim. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. A tree is a graph/network/structure and Fig. 4 of Heckerman is a graph/network/structure depicting a Bayesian network structure. The variable of Fig. 4 are binary. Binary variables can have either a zero value or a one

value, false or true.....alternating values. Hence, Heckerman anticipates the limits of claim 20. Again ¶ 11. is very important and the applicant must fully appreciate the Examiner's approach to interpretation of the claims.

Examination Considerations

8. The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

9. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior

art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

10. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

11. Examiner's Opinion: ¶¶ 8.-10. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any,

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Claims 11-23 are rejected.

Correspondence Information

14. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

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Hand delivered to:

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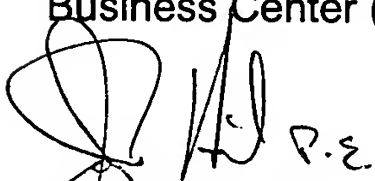
Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

A handwritten signature in black ink, appearing to read 'J. P. Hirl', with a stylized flourish at the end.

Joseph P. Hirl
Primary Examiner
September 28, 2006